|  |  |  |
| --- | --- | --- |
| 1) If g(x) = 3x – 1 and f(x) = x2 + 1, compute f g(x).   * 1. 9x2 – 6x +1   2. 9x2 – 6x+ 2   3. 9x2 – 6x – 1   4. 3x2 + 3   5. 3x2 + 2 | 2) If x is a real number, and the value of is undefined, what is the value of x + 8?   * 1. -8   2. -5   3. 0   4. 3   5. 5 | 3) Compute g(f(x)) if f(x) = 2x+ 4 and  g(x) = 3x – 2.   1. 3x + 2 2. 3x + 12 3. 3x + 14 4. 6x + 10 5. 6x |
| 4) What is the sum of the values that make the following expression undefined?   1. – 9 2. -7 3. -2 4. 0 5. 9 | 5) If f(x) = x+ 4 and g(x) = 3x – 2 then f g(2) =   1. -5 2. 0 3. 4 4. 6 5. 8 | 6) If f(x) =, then f(f(4)) = ?   1. 12 2. 16 3. 132 4. 144 5. 169 |
| 7) The expression is undefined for what values of x?   * 1. x   2. x   3. x = 0   4. x   5. x 6 | 8) Which of the following equations represents the graph of the function below?  graphrat_vasm2  a.  b.  c.  d.  e. Cannot be determined | BOOM! |

|  |  |  |
| --- | --- | --- |
| 9) Find the length of side *x* in the triangle below.  x  18 m  60°   1. 6 2. 6√3 3. 9 4. 9√2 5. √18 | 10) Find the value of x in the right triangle. \*Simplify your answer.  12 cm  18 cm  x  a.  b. 6  c. 6  d. 18  e. 72 | 11) Which of the following could be the side lengths of a right triangle?  a. 2, 3, 4  b. 8, 15, 24  c. 7, 24, 25  d. 7, 7, 24  e. Cannot be determined from the given information |
| 12) Draw a figure and solve: An angle C is a right angle, and the measure of angle A is 45 degrees. Given that AB = 40, find the length of BC.   1. 20 2. 20 3. 40 4. 40 5. 20 | 13) Find the length of side x in the isosceles right triangle below.  x  12 ft.   1. 12√2 ft. 2. 6√2 ft. 3. 2√2 ft. 4. 24 ft. 5. 24√2 ft. | 14) Find the value of ‘A’ in the triangle shown below.    A. A=15  B. A=20  C. A=20  D**.** A=20  E. A = 15 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 15) In the triangle shown below, what number does x represent?    56  17 ft 17 ft    x    a. 56  b. 62  c. 68  d. 124  e. 180 | 16) In the figure below, which of the following congruencies must be true?  a)  b)  c)  d)  e) | | | 17) In triangle XYZ shown below, XY XZ, and the measure of Y is 65 degrees. What is the measure of X?  X  65  Y Z  a. 50 b. 65 c. 115 d. 130 e. 180 |
| 18) In the figure triangle ABC ~ triangle DEF. What is the length of the side x?  A  B  C  D  E  F  4 in  5 in  x  15 in   1. 3 cm 2. 4 cm 3. 5 cm 4. 12 cm 5. 16 cm | 19) Triangle DEF is an isosceles triangle. The measure of one of the base angles is 30 degrees. What is the measure of the vertex angle?   * 1. 30   2. 60   3. 120   4. 150   5. 180 | | 20) The rectangular field shown is 24 m wide and 32 m long. John and Jessica are at point C. John walks to point A by walking along the edge of the field through point D. Jessica gets to point A by walking diagonally across the field. How many meters more does John walk than Jessica?  24 m  32 m  A  B  C  D   1. 16 b. 24 c. 32 d. 40 e. 56 | |
| 21) The lengths of the corresponding sides of two similar right triangles are in the ratio of 3:4. If the hypotenuse of the larger is 12 inches long, how long, in inches, is the hypotenuse of the smaller triangle.  a. 2   1. 3 2. 4 3. 9 4. 12 | | 22) One route along flat terrain from Madison to Chicago is to drive south from Madison for 100 miles to Chicago, then at Chicago to drive east 200 miles to South Bend. If a straight flat road existed between Madison and South Bent, how many miles would it be?   1. 300 | | |

|  |  |  |  |
| --- | --- | --- | --- |
| 23) In the standard (*x*, *y*) coordinate plane, how many units separate the points (8, -1) and (1, 5)?  A. 13  B.  C.  D.  E. | 24) Simplify the expression:  a.  b.  c.  d.  e. | | 25) If the line is in standard (x,y) coordinate plane that passes through the points (4a, 9) and (8a, 5) and has a slope of , what is the value of a?   1. -2 2. -1 3. 0 4. 1 5. 2 |
| 26) On the standard (x, y) coordinate plane, line segment AB has endpoints (10, 30) and (12, 34). If (a, b) is the midpoint of AB, what is a + b?   * 1. 44   2. 43   3. 56   4. 86   5. 1,140 | 27) + is equivalent to:  a.  b.  c.  d.  e. | | 28) Simplify the expression  a.  b.  c.  d. 3  e. 2x |
| 29) The graph below shows how much money a lemonade stand made over the course of several months. Approximately how much more money did the stand make on 11/25 than on 11/15? | | 30) The perimeter of rectangle ABCE is 42 inches. Measurements on the figure are in inches as marked. What is the area, in square inches, of the quadrilateral ABCD?  A  B  C  D  E  A  B  C  D  E  9  9  4 | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 31) The triangle shown below is a right triangle with angles and sides as marked. Find the value of *b* to the nearest tenth of a centimeter. *(Note: , , )*    a. 27.5 cm  b. 16.6 cm  c. 17.6 cm  d. 36.6 cm  e. Not enough information given | 32) An angle in a right triangle has a measure . If tan =, then sin= ?  a. b. c. d. e. | 33) You have an extension ladder that you are using to repair a chimney. Which of the following is a trig ratio that could be used to find the length required for the extension ladder to reach a height of 14 ft for the chimney?   |  |  | | --- | --- | | a.  b.  c.  d.  e. |  | |
| 34) In the figure below, ABC is a right triangle with a right angle at C. Which of the statements about this figure is NOT correct.  a. sin A =  A  B  C  10  6  8  b. cos A =  c. cos B =  d. tan A =  e. tan B = | 35) In the figure below, angle C is a right angle, and a, b, and c represent the lengths of the sides of the triangle. What is the tangent of angle A?      A  B  C  a  b  c | BOOM! |

|  |  |  |
| --- | --- | --- |
| BOOM! | BOOM! | BOOM! |
| BOOM! | BOOM! | BOOM! |
| BOOM! | BOOM! | BOOM! |